

Notice of Allowability

Application No.

10/639,056

Examiner

Charles G. Freay

Applicant(s)

BENNETT ET AL

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the interview of July 6, 2005.
2. ☒ The allowed claim(s) is/are 1-5, 7-19 and 21-23.
3. ☒ The drawings filed on 12 August 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 6/28 and 7/6, 2005.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with George Chaclas on July 6, 2005.

The application has been amended as follows:

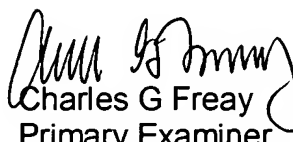
The claims have been amended as set forth in the attached and requested e-mail transmission of the complete claim listing received July 6, 2005.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles G. Freay whose telephone number is 571-272-4827. The examiner can normally be reached on Monday through Friday 8:30 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe can be reached on 571-272-4444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Charles G Freay
Primary Examiner
Art Unit 3746

CGF
July 7, 2005

Freay, Charles

From: GChacclas@edwardsangell.com
Sent: Wednesday, July 06, 2005 6:13 PM
To: Freay, Charles
Subject: Serial No. 10/639,056

Dear Examiner Freay,

As we discussed on the telephone, attached is a revised set of claims for the above-identified application. Please note that the March 21, 2005 amendment in this application did not amend the claims. Thus, I believe that this claim set is appropriate for entry by an Examiner's amendment.

If you have any questions, please do not hesitate to contact me.

Best regards,

George N. Chacclas
Edwards & Angell, LLP
2800 Financial Plaza
Providence, RI 02903 USA
401.276.6653 fax 888.325.1684
www.EdwardsAngell.com

Boston, Ft. Lauderdale, Hartford, New York, Providence, Short Hills NJ, Stamford, West Palm Beach, Wilmington, London (Representative office)

CONFIDENTIALITY NOTICE

This e-mail message from Edwards & Angell, LLP is intended only for the individual or entity to which it is addressed. This e-mail may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you are not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you received this e-mail by accident, please notify the sender immediately and destroy this e-mail and all copies of it.

7/8/05

Requested CAF 7/8/05

PROPOSED CLAIMS

1. (currently amended) A fuel metering unit for controlling a variable displacement pump comprising:

- a metering valve in fluid communication with the pump for metering an output of the variable displacement pump;
- a flow line for creating a spill return flow from an output of the pump;
- a pressure regulator in fluid communication with the flow line for receiving the spill return flow; and
- a control valve for regulating the spill return flow to a substantially constant small level to prevent excessive heat generation during recirculation by setting a displacement of the pump; and
- an orifice operatively connected to the output of the pressure regulator for creating a pressure differential across the control valve.

2. (original) A fuel metering unit as recited in Claim 1, further comprising a servo mechanism operatively connected to the spill return flow for determining the output of the pump and thereby the spill return flow.

3. (original) A fuel metering unit as recited in Claim 2, wherein the servo mechanism is a half area servo mechanism.

4. (original) A fuel metering unit as recited in Claim 2, further comprising a static pressure line between the output of the pump and the servo mechanism for facilitating a proper setting of the servo mechanism.

Requested Cof 7/8/05

5. (previously amended) A fuel metering unit as recited in Claim 1, further comprising a static flow line between the output of the main metering valve and the pressure regulator for facilitating a proper setting of the pressure regulator.

Claim 6 cancelled.

7. (previously amended) A fuel metering unit for controlling a variable displacement pump actuated comprising:

a servo mechanism for varying an output of the pump;

a metering valve operatively connected to the output of the pump and an engine such that actuation of the metering valve controls an output of the variable displacement pump so as to schedule fuel flow accurately to the engine;

a spill return flow line connected between the output of the pump and the metering valve;

a first regulator operatively connected to the spill return flow line such that a first pressure differential across the first regulator determines an output of the first regulator; and

a second regulator operatively connected to the output of the first regulator and the servo mechanism such that the output of the first regulator is regulated during a steady-state condition, and during a transient condition, a second pressure differential across the second regulator varies to adjust an output of the second regulator to, in turn, adjust the servo mechanism to vary the output of the pump such that a subsequent flow in the spill return line is substantially equal to a desired flow.

8. (original) A fuel metering unit as recited in Claim 7, further comprising a feedback line connected between the output of the pump and the servo mechanism.

9. (original) A fuel metering unit as recited in Claim 7, a static sensing line connected between the metering valve and the engine.

10. (original) A fuel metering unit as recited in Claim 7, a servo line connected between the pump and the metering valve.

11. (currently amended) A fuel metering unit for controlling a variable displacement pump comprising:

first means in fluid communication with the pump for metering an output of the pump;

second means in fluid communication with the first means to create a bypass flow for responding to transients; and

third means in fluid communication with the second means and the pump for regulating the bypass flow so bypass flow is substantially constant by variably setting a displacement of the variable displacement pump; and

fourth means for creating fluid communication between the output of the pump and the third means.

12. (original) A fuel metering unit as recited in Claim 11, wherein the first means is a metering valve.

13. (original) A fuel metering unit as recited in Claim 11, wherein the second means is a first regulator.

14. (original) A fuel metering unit as recited in Claim 11, wherein the third means is a second regulator.

15. (currently amended) A fuel metering unit as recited in Claim 11, further comprising a ~~fourth~~ fifth means operatively connected to the bypass flow for determining the output of the pump.

16. (currently amended) A fuel metering unit as recited in Claim 15, wherein the ~~fourth~~ fifth means is a servo mechanism.

17. (currently amended) A method for maintaining a constant spill return flow in a fuel metering unit that provides fuel to an engine, the method comprising the steps of:

metering an output of a variable displacement pump;

creating a spill return flow from the output of the variable displacement pump to allow for quick response when additional fuel is required by the engine;

regulating the output of the pump with a regulator based upon the spill return flow;

regulating an output of the ~~first~~ regulator with a control valve to maintain the spill return flow substantially constant, wherein an input of the control valve is in fluid communication with the output of the pump through a flow line separate from the spill return flow; and

adjusting a displacement of the pump based upon an output of the control valve.

18. (original) A method as recited in Claim 17, further comprising the step of adjusting a position of a servo mechanism based upon the output of the control valve to determine the displacement of the pump.

19. (original) A method as recited in Claim 17, further comprising the step of creating a pressure differential between two inputs of the control valve to determine the output of the control valve.

Claim 20 cancelled.

21. (new) A fuel metering unit as recited in Claim 11, wherein the fourth means is a flow line.

22. (new) A fuel metering unit for controlling a variable displacement pump comprising:

a metering valve in fluid communication with the pump for metering an output of the variable displacement pump;

a first flow line for creating a spill return flow from an output of the pump;

a pressure regulator in fluid communication with the flow line for receiving the spill return flow;

a control valve for regulating the spill return flow to a substantially constant small level to prevent excessive heat generation during recirculation by setting a displacement of the pump; and

a second flow line connected to place the control valve in direct communication with an output of the pump.

23. (new) A method for maintaining a constant spill return flow in a fuel metering unit that provides fuel to an engine, the method comprising the steps of:

metering an output of a variable displacement pump;

creating a spill return flow from the output of the variable displacement pump to allow for quick response when additional fuel is required by the engine;

regulating the output of the pump with a regulator based upon the spill return flow;

regulating an output of the regulator with a control valve to maintain the spill return flow substantially constant, the control valve being located in a flow line and having two control inputs;

adjusting a displacement of the pump based upon an output of the control valve;

and

creating a pressure differential between the two control inputs of the control valve to determine the output of the control valve.